TRAVEL REPORT

on a Study Trip to Eskimo Settlements and Research Projects in Alaska, July-August 1971

by

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Contents:

I. Invitation and Purpose of the Visit

II. Travel Programme

III. Arctic Research. The International Biological Programme (IBP)

IV. Alaska - short Description of the Land. Map.

V. Alaska Population, Eskimos

VI. Institutions and Personnel visited

VII. Observations

1. Anchorage, Alaska Native Health Service

2. The Northern Region

a. Fairbanks

b. Barrow Town and Point Barrow (Naval Arctic Research Laboratory)

c. Wainwright

d. Anaktuvuk Pass

VIII. Discussion - Public Health Problems and Services

IX. Acknowledgement

X. Short Eskimo Vocabulary

XI. Literature

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I. Invitation and Purpose of the Visit

Under the Auspices of the U.S. National Academy of Science, the writer was invited to participate in the International Biological Programme (IBP) Eskimo Research Projects in North Alaska, and to lecture on the public health of nomads. The invitation was initiated and forwarded by Adj. Assoc. Professor of Human Ecology at the Univeristy of Alaska, Institute of Arctic Biology, Frederick A. Milan, who also planned and administered the travel programme and field studies.
The purpose of the journey could be summarized as follows:

1. To participate in the IBP Eskimo Research projects in Alaska
2. To study and discuss public health conditions and administration, particularly in sparsely populated areas of Alaska and among the Eskimo population
3. Lecturing at the University of Alaska, Fairbanks, the Naval Arctic Research Laboratory (NARL) at Point Barrow, and at the Alaska Native Health Center in Anchorage.

The travel programme was arranged accordingly.

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II. Travel Programme

19th July - 6th August, 1971. Travel by air.

1971 July	19 (Mon)	from Göteborg, Sweden, over London to Anchorage, Alaska (BOAC)
	21 (Wed)	to Fairbanks to Barrow (Eskimo town)
	24 (Sat)	to Wainwright (Eskimo village)
	25 (Sun)	to old Eskimo settlements (by boat)
	28 (Wed)	to Naval Arctic Research Laboratory, (NARL), Barrow to Fairbanks, via Prudhoe (oil industry)
	29 (Thu)	to Anaktuvuk Pass (inland Eskimo village)
Aug.	1 (Sun)	to Fairbanks
	4 (Wed)	to Anchorage
	5 (Thu)	from Anchorage (Lufthansa)
	6 (Fri)	to Göteborg, Sweden, over Amsterdam and Copenhagen

Lecturing:

July 20 Alaska Native Hospital, Anchorage: Socio-medical problmes among the Scandinavian Lapps

Aug. 4 University of Alaska, Fairbanks: Public health problems among nomadic peoples.

Participation in Rotary meeting in Fairbanks 3rd of August

III. Arctic Research. The International Biological Programme

The five Scandinavian (Nordic) countries have together a population of about 2 million living under Arctic or Subarctic climatic conditions. For more than ten years there have been discussion and cooperation between these countries in the field of Arctic or Circumpolar health problems.

In 1969 the Nordic Council of Arctic Medical Research was established, with 2 - 3 delegates from each country and its secretariate in Oulu in Finland. The aim is cooperation and coordination of Arctic health research, with a complete inventory of actual research programmes, already started or carried out, as its primary task. Almost 100 research projects are listed in the report presented at the Oulu symposium in 1971, which was also organized by the Council.

The Arctic has been defined in several ways; one suggests the circumpolar tree-line as the borderline. Using this definition the Arctic land surface will be about 6.5 million sq. kms holding a total population of approximatively 200,000, of whom roughly 50 per cent are counted as natives.

If the tundra - the permafrost area - is all included, the Arctic population will be around 1.5 million, the majority being non-natives, military service personnel etc. If the definition is widened to include what is called the Subarctic, the population again rises to 10 million, of whom 2 million live in Scandinavian countries. When we speak about Circumpolar lands and peoples, this definition is mostly used.

Strictly speaking, however, the real Arctic populations are located beyond the tree-line, and in this area live - among other peoples - about 75,000 Eskimos, 35,000 Lapps, Samoyeds and other Sibirian tribes. The tree-line naturally is related to climatic conditions and it is therefore not surprising, that it roughly coincides with the isotherm for an average July temperature of +10 degrees C. Thus the Arctic is characterized particularly by its Arctic climate resulting in a subsequent permafrost, making agriculture impossible or in any case

unprofitable. Average temperatures of different months as a whole are however less informative than the amplitude between mean temperatures of summer and winter months.

To these conditions are added unusual conditions concerning the light cycle, due to the fact that the polar lands are north of the Arctic Circle. All these factors influence the length of the snow-period and the annual vegetation period. Finally, not only latitudes, but often geographical location and altitude influence the total Arctic climate.

In general, the precipitation in the Arctic is small, it falls almost only in the form of snow. On the other hand the evaporation is also small.

Because of the extreme climatic conditions and the scattered population there is practically no water-air-pollution in the Arctic, but it is feared that these areas in near future have to be included in global control of these problems. Air pollution is now found in towns with radiation inversions of temperature in the first 300 m. Inversions inhibit turbulence and pollutants (ice fog, carbon mon-oxide from car exhausts, etc.) are trapped beneath the inversion layer. Fairbanks in winter is an example.

In 1962 the World Health Organization invited to a 'Conference on Medicine and Public Health in the Arctic and Antarctic'. The meeting was held in Geneva with participants, inter alia, from the Scandinavian countries. Several reports were presented.

As a biological analogue to the International Geophysical year, an International Biological Programme (IBP) was started (1967), focusing on two major components:

the problem of human adaptability

the problem of environmental management

The Eskimo part of the IBP has been concerned with human adaptation - genetical, physiological and behavioral, survival in an extreme environment, and problems connected with urbanization. Demography, reproduction, genetics, child growth, quantification of nutritional energy flow through the eco-system (of which the human population is a part) have been elucidated.

This new type of approach, which has been called the beginning of the 'big biology', involves the use of multidisciplinary research-teams. In order to standardize and make results from different research areas comparable, WHO international recommendations are followed. After years of planning, the IBP is being carrid out during the five-year period 1967-1972. At an early stage an Arctic veteran and anthropologist, Frederick Milan, became the organizer and the principal investigator of the Eskimo part of the IBP, carried out in Alaska. Similar Eskimo studies have been carried out in Canada and in East and West Greenland. Scientists of 57 nations have subscribed to the IBP Eskimo programme, including some Scandinavians. The IBP Human Adaptability programme has comprised biological studies of Eskimo populations (Lewin, Barslev-Jörgensen, etc.) and of about 1800 Lapps. Some 65 researchers have been involved in these studies and so far published 60 publications. Further research is being planned for a district in Iceland within the frame-work of IBP Man and the Biosphere programme.

Thus, a fruitful international cooperation and exchange of data experience in the field of circumpolar health have already taken place, and at the Second International Symposium on Circumpolar Health held in Oulu in Finland in June 1971, attended by some 270 scientists from 13 nations, including Japan, Australia, USA and Alaska, some IBP results were presented. A multitude of other papers on arctic health problems were read and discussed. Although basic research papers on traditional physiological problems dominated the meetings, some attention was given to the rapidly growing socio-medical and mental health problems of Arctic populations. It is likely that next circumpolar conference will devote much more time to these important problems and to public health planning and administration.

Among Scandinavian scientists, who have been occupied with health problems and adaptation in the Arctic, is Professor P.F. Scholander formerly at the Zoophysiological Inst. in Oslo, now at Scripps Institute in California, USA, and replaced by Professor K. Lange Andersen. Research on Arctic clothing

and adaptation to cold has been carried out under the auspices of the Swedish Armed Forces' research laboratory and the physiologist Professor Hans Ronge, Göteborg. Experience in the same field has also been collected at the Swedish Mountain Army Training School in Lappland and by the British-Norwegian-Swedish Antarctic Expedition 1949-1952.

Among Scandinavian health scientists, previously visiting places in Alaska, studied by the writer are:

From Norway: Helge Ingstad, studies on the Nunamiut Eskimos
Kaare Rodahl, previous director of the Arctic Aeromedical Laboratory of the US Air Force in Fairbanks
P.F. Scholander
K. Lange Andersen

From Denmark: Helge Larsen, studies of the Nunamiut Eskimos
Peter Freuchen, Eskimo studies (died in Alaska 1957)

From Finland: Henrik Forsius, eye studies

From Sweden: Ove Wilson
Thord Lewin

IV. Alaska - short Description of the Land.

Alaska- in Aleut Alaxsaq, meaning the great land - is located on the NW tip of the North American continent between the N. latitudes 55 and 77. Its land area is 1.5 million sq.km, or about one quarter of the world's Arctic land. One third of Alaska is located north of the Arctic Circle. The present population is 302,173 (1970 census).

Thus Alaska is the largest and the least populated of the 50 USA states, a vast and sparsely populated country with an average of about one person per 6 sq.km. (Compare USA 50/km^2 and Sweden 19/km^2). 75% of the total population is urbanized and 50% live in the Anchorage area. The rest of the urbanized population is concentrated to the Fairbanks, Juneau and Ketchikan areas. Enormous areas have only scattered, small and widely dispersed settlements and hamlets following early cultural

patterns. The majority of the about 51,700 natives of Alaska lives in 228 native villages. Ten thousand live permanently or temporarily in the six largest, urbanized areas. The largest native town is Barrow, on the North Slope, with over 2000 inhabitants, 90% of which are Eskimos.

Large regions - as can be seen from the air - could simply be termed as empty areas, especially the endless, treeless and trackless tundra in the north.

The famous Yukon River - 3000 km long - divides Alaska in one north and one south part of about the same size. Among the mountain areas Mt Kinley, 6000 m, dominates in the south and the wide Brooks Range in the north, separating the 'arctic slope' from the rest of the country.

Some factors, peculiar to northern latitudes and Alaska and to a great extent decisive to the development, should be mentioned:

1. The cycle of light with midnight sun and a long polar night, short and cold summers and long, cold and snow-poor winters, are conditions which have been made responsible for what is called 'cabin fever' among newcomers. The varying photoperiod, also affects biological cycles of nature.

2. Extreme climatic conditions characterized by low arctic temperatures. This results in an eternally frozen subsoil, permafrost or tundra, which is - in spite of years of study and experiment - a major obstacle to Alaska's development. Permafrost is underlying about 60 per cent of Alaska's land masses, and 20 per cent of the total land surface of the whole earth, including 50 per cent of Canada's and Sibiria's land areas. Scandinavia has no real permafrost - if this is defined as persisting at least over two years of time. In Alaska the permafrost starts a few decimeters under the ground surface and continues down to 50-300 meters depth.

The frozen ground is hard to excavate for cellars, cemeteries, wells and pipelines. It has a much reduced absorbative capacity for sewage. In the winter the surface ground layer is

also frozen, often leaving a small unfrozen layer over the permafrost. Thawed on the surface every summer, there is no drainings for the water, and thus the tundra landscape is dotted with an endless number of pools and fresh water lakes.

Chemical and biological reactions and destruction are generally retarded at low temperatures, thus further complicating sewage and waste disposal. Unless special precautions are taken, pipelines with water sewer will freeze. The foundations of highways and buildings often settle or heave as a result of disturbances in the permafrost. Finally, widely dispersed small communities add to difficulties and costs of water supply and sewage disposal programmes in Alaska. Underneath houses the annual winter frost will not bite and the permafrost has often a depression here, tending to collect a standing and highly contaminated water pool under the house.

3. Unusual distances, a sparse and scattered population, together with a harsh nature and climate have reduced road construction to a minimum, linking Fairbanks and Anchorage with each other, with their surroundings and with Canada and the 'Lower 48'.

There are considerable physiographic obstacles in Alaska for traditional communication systems. The state has only one short railway. Most communications is through a well developed system of air strips and regular air transports run by experienced 'bush pilots'. Local transports, in the past carried out by dog teams, are now mostly done by snowmobile and snow-scooter ('ski-doo').

4. As a result of the geographical location and climatic conditions the ecological resources of Alaska are relatively meagre. The bulk of Alaska's food supply - in spite of all fish, whales and game - is imported, and spaghetti, coca-cola, coffee and ice-cream are common ingredients in a rapidly changing native diet and cultural transition. However, as a whole nutrition is not a leading health problem.

5. This all adds up to the fact that development expenditures are deemed to be relatively unprofitable and in some cases unjustifiable - unless you find oil or valuable minerals, which of course rapidly changes the whole picture and development of a district.

Alaska has an **abundance** of minerals, oil, wood (pulp), game (fur and meat), fish and whale. Of USA's 33 indispensable minerals, 32 are found in Alaska. A new and rich oil well has newly been discovered in the North Slope (Prudhoe) and an enormous pipeline will cross the whole of Alaska ending down on the ice-free South coast

In 1867 Alaska was sold by Russia to USA (US $ 7.2 million). In 1949 it became state number 49 of the Union with its own State Government and elected Governor. The capital is Juneau, located on the 'pan-handle' of the Alaska map.

V. Alaska population. Eskimos.

The original population of Alaska are Indians and Eskimos, both originating from Asia and invading North America some 10.000 years ago. On the Aleutian islands a separate Eskimo population and culture has developed. In addition to these three native groups non-natives have arrived, making a total of four ethnic groups, languages and cultures.

The total number of natives in Alaska is 51,700, of whom Eskimos about 25,000 and 27,000 Indians. At census taking, those who declare themselves Eskimo are registered under Eskimo population. The total number of Eskimos in the world today is about 75,000, of whom:

38,378 in Greenland (1969)
approx. 25,000 in Alaska
- " - 10,000 in Canada
- " - 1,500 in Sibiria (Yunites)

Eskimos occupy about 5,000 sq. km land area, with a distance of 5,000 km between the extreme easterly and westerly groups. All Eskimos have basically a common language, which is polysynthetic and of great antiquity. The 'whites' or non-natives

include Alaska-born residents and immigrant from the 'Lower 48'. It also includes about 1000 Negroes and some Filipinos. The main part of the Alaska population - and of non-natives - is made up largely of 'transplants', not born in Alaska, but for longer or shorter periods occupied with educational, health, communication, administrative or industrial services. There is a surprisingly large, modern and development-minded group of young Americans devoting their active life to Alaska problems.

The 'get-rich-and-get-out-quick' fortune seeker, or the escapist from the 'Lower 48' seldom contribute to Alaska's development and are also becoming increasingly rare. Alaska is no place for 'minus-variants'.

In summary: the heterogeneous population of Alaska with different backgrounds, social patterns and expectations naturally complicates the development, e.g. within the fields of education and health services.

VI. Institutions and Personnel visited.

Anchorage:

1. Alaska Area Native Health Service, including the Alaska Native Medical Center (all run by the Federal Govt.):

John F. Lee, MD, Area Director, Area Offices
Charles N. Neilson, Deputy Director, Area Offices
M. Walter Johnson, MD, Clinical Director, Medical Center
J. Kenneth Fleshman, MD, Chief Pediatrician, Medical Center
Charles J. Hudson, MD, Chief Psychiatry and Mental Health (transcultural psychiatry), Alaska Native Health Service

Other hospital physicians (about 15):

Ted Vieira, Statistician, Alaska Native Health Service
David R.L. Duncan, MD, Service Unit Director, Tanana

Ralph A. Seltzer, MD, Chief Special Projects Branch, Indian Health Service, Washington D.C. (tel. communication)

2. Alaska Department of Health and Social Services (run by Alaska State Govt.):

Robert J. Fraser, Chief Tuberculosis Control and Chest Diseases, Alaska Department of Health and Social Services

Fairbanks/College

1. Arctic Health Research Center (AHRC) (under the Federal US Department of Health, Education and Welfare, Public Health Service):

William J. Beck, PH. D., Director
Frederick A. Milan, PH.D., Chief Department of Behavioral Sciences
Robert L. Rausch, D.V.M., Ph.D., Parasitologist
Edward M. Scott, Ph.D., Biochemist (nutrition etc.)
Jules B. Cohen, Ph.D., Sanitary Engineer

2. University of Alaska, Institute of Arctic Biology:

F. A. Milan, Ph.D., Adj. Assoc. Prof. Human Ecology
Irma Duncan, Ph.D., Arctic Health Research Center
R. Wainwright, MD and Mrs W., MD, Office of Economical Opportunity, Bethel

Barrow Town/Point Barrow

1. The Alaska Native Hospital (Federal Govt.)

Osamu H. Matsutani, MD, Service Unit Director
David A. Byrne, MD, Physician

2. The Health Center (Alaska State Govt.)

Ruth Ward, Mrs, Chief Nurse

Robert J. Fraser, MD, Chief Tuberculosis Control (Anchorage)
Frith, D.V.M., M.P.H., Regional Health Officer N. Region, (Fairbanks)

3. International Biological Programme (IBP):

Paul Jamison, Ph.D., Team Leader pro tem. (University of Wisconsin) Physical anthropology
Robert Meier, Ph.D.,(University of Indiana) Physical anthropology
Ron Washburn, Stud. Med. III, (Buffalo University, N.Y.)
Don Wilson, Mr. and Mrs., laboratory technicians
Don Bosman, Doctor of Veterinary Medicine

4. Naval Arctic Research Laboratory (NARL), Point Barrow:

Several scientists seen.

Wainwright

IBP-team (from Barrow), field station (NARL field station).

Nutrition study team from University of Illinois, Harold Draper, Ph.D., Larry Hursh, MD, Christine A. Heller Ph.D.

Anaktuvuk Pass

NARL Field Station: John D. Hedlund, Oak Ridge National Lab. AEC. (Radiophysics studies)

Other Alaskan Scientists met in Oulu in Finland in 1971 at the Second International Symposium on Circumpolar Health.

Carl D. Koutsky,MD, Director Alaska Psychiatric Institute, Anchorage
Thomas R. Bender, MD, Chief Center for Disease Control, Anchorage
Carolyn Brown, MD, Chief Epidemiology, Alaska Area Native Health Service, Anchorage
Donald K. Freedman, MD, Director Division of Public Health, Alaska Department of Health and Social Services, Juneau
Elizabeth (Betsy) Tower, MD, Regional Health Officer South Central Region, Anchorage
Edward Foulks, MD, Psychiatrist, University of Pennsylvania

VII. Observations

1. Anchorage and Alaska Native Health Service

Anchorage with about 40.000 inhabitants in the city and a total of 120.000 if the immediate surroundings are included, is the center for administration of native health services. The population of the Anchorage area - about half of Alaska's total population - represents all four ethnic groups. Much of the city resembles the 'gold-digger' time with its Klondike settlements in far-flung suburbs, but in the center are super-modern quarters and skyscrapers. Three major cities in Alaska, Anchorage, Ketchikan and Sitka plus eight villages fluoridate water.

Native health services in Alaska are principally provided and run by the Federal Government under its Department of Health, Education and Welfare, and as a part of its Indian Health Service within the Public Health Service, and Bureau of Community Environmental Management. There is a close cooperation between the Alaska Native Health Service and the Arctic Health Research center.

In addition to traditional health services the Alaska Native Health Service assists in providing environmental health, including housing, water supply, waste water and solid waste disposal to the native population. Communicable disease control under Dr. Bender is primarily interested in epidemiology and research. Indian Health Services (IHS) with the referral hospital in Anchorage, and district hospitals and health

centers (public health service units) in the field, are all strictly for Natives. The State of Alaska Government and its Department of Health and Social Services (ADHSS) is responsible for public health services to the non-native population and the tuberculosis control of all groups, the latter activity with its base in Anchorage. A Director of Health is stationed in Juneau and has regional health officers under his direction. Both ADHSS and the Federal HSMHA utilize the services of the AHRC laboratories (Federal) in their work.

There is a certain overlapping and duplication in the works done under the two major authorities responsible for health services, the Federal and the Alaska State Governments. There are also services run by Church Missions, by private agencies and especially by the Military Forces.

In total there are 2350 hospital beds in Alaska, of which 1121 in Anchorage, 276 in Fairbanks and 402 in the Sitka/Juneau area. This makes an average of one hospital bed for 100 persons. There are between 375 and 400 active physicians in Alaska, about 200 of whom private practitioners, 110 with the military forces and 75 at hospitals, making an average of one doctor for 600 population. If military forces are excluded, the figure will be about one for 800.

Village health aides are native villagers specially trained for local health problems and stationed in their own village. They are trained in three periods, each of 2 months duration, at nearest hospital. They are trained to give early antibiotic treatment etc. especially for otitis media, which was a strong reason for the establishment of this group of health personnel. They can do treatment either after consultation with physicians by radio or on standing orders.

A multitude of studies have been carried out in the field of public health in Alaska and published, offering an unusual, convenient and frank information on health problems of Alaska to the visitor.

The Alaska State Medical Association (ASMA), composed mainly of private practioners, is an organization for doctors in Alaska. One of its standing committees is dealing with 'bush medicine - public health' (Dr W. Johnson, etc.)

The Alaska Native Medical Center (Federal) started in 1953 with the primary aim to introduce a systematic tuberculosis control programme. It has now a general hospital in Anchorage with a system of satellite field hospitals. The motivation for this service offered to the natives was explained in the following way: 'It is considered unacceptable that Native people (in Alaska) should continue to have the lowest health status of any population group in the United States'. The state of education and health and of economics was considered the poorest in the nation. A further motivation was that it was observed, that the effect of poverty, cultural clash with modern world, the geographical isolation and adverse physical environment, all 'combined to develop in many Alaskan Natives a frustration, alienation and sense of hopelessness'.

The federal hospital in Anchorage has, apart from its direct service function, a supervisory function, which also includes mental health and communicable diseases.

The Alaska Native Hospital in Anchorage has apart from its general medical, surgical and pediatric departments also departments for clinical and supervisory work in the fields of mental health and tuberculosis. The hospital has a total of 276 beds. In 1970 there were 4508 admissions. With an average length of stay of 16.4 days making an average daily patient load of 202.7. In the same period there were 55,126 outpatient visits. About 60 per cent of the utilization of the hospital is by the population in the Anchorage area. The rest of the patients are referred to the hospital from field stations and sent by air. Only Natives are treated.

The birth rate for all Alaska Natives was:

in 1961 47 promille

1968 30 (non-native Alaskans 23, US whites 17, US non-natives 25)

The infant mortality rate for all Alaska Natives was:

in 1960 75 promille

1968 40 (for US and Alaska whites 20, US non-whites 38)

1969 31.6

1970 28.5

The dramatic reduction of the infant mortality is due mainly to a marked decrease in deaths during the post-natal period and to reduction of environmentally related infectious diseases, such as respiratory tract infections and gastro-enteritis. This has to some extent been attained through health education, but primarily through a considerable expenditure on therapeutic health services and immunization programmes (polio, tetanus, diphteria, whooping cough). At the same time practically all native births take place in medical facilities (95 per cent in 1970) and have antenatal care.

In the 1959 census the median age in Alaska was 18.5 years. Corresponding figure for USA was 30.1 years. There has been a considerable excess of males in Alaska, which is now decreasing.

Health service for natives provided by the Indian Health Service is divided administratively into seven service units with the following area:

Anchorage	260.000 sq km
Barrow	210.000
Bethel	190.000
Kanakanak	100.000
Kotzebue	200.000
Mt Edgecomb	95.000
Tanana	415.000

Total Alaska 1.47 million sq km

Notifiable diseases are, apart from the traditional ones, including tuberculosis and VD, also acute otitis media, streptococcal throat infections, pneumonia and impetigo.

Leading health problems are considered:

1. Infectious diseases, including otitits and tuberculosis
2. Mental health problems
3. Accidents

Through intensive - and expensive - campaigns polio and diphteria have been brought under control and are now practically eradicated from Alaska.

Alaska has the highest rates of VD in USA with an increasing number of syphilis-cases reported. In 1970 about one case per month, while the figure in 1971 was 29 reported cases for the first five months of the year. In 1970 were reported 888 cases of gonorrhoea per 100.000 population. Of Alaskans 20-24 years old, 4% had gonorrhoea during the first half of 1970, and as it was estimated that 'only one case in nine was reported, the true incidence may be as high as 36%' (for this age group in half a year).

Tuberculosis, for well over a century Alaska's number one health problem and a serious scourge, is now under reasonable control. The tuberculin test conversion rate among Alaskan children is now the same as in US generally. Thus the problem is now largely reduced to surveillance of the already infected population. Especially as the tuberculin sensitivity in the under four age group has almost disappeared. BCG-vaccination is not considered as indicated any more.

The TB-control is the responsibility of the Alaska State Government with a center for this purpose in Anchorage, from where once a year a case-finding team visits Native settlements. One starts with skin-testing of all villagers and continues with X-ray of positive adults, and sputum cultures of all X-ray positives. The treatment of tuberculosis cases is principally run on an ambulatory basis (now with Rifampicin, INH, etc.) under periodic control by the public health nurse at the health centers. Four times a year the tuberculosis specialist from Anchorage (now Dr Fraser) visits ten places for consultations. If hospital treatment is needed, 'minimum disease cases' may be treated as inpatients at the local

Native Hospital (Federal), otherwise the case is sent by air to the TB-department of the Alaska Native Hospital in Anchorage. Non natives are treated intially in private hospitals.

Groups with positive tuberculin test and chest radiographic findings of inactive tuberculosis are given preventive treatment with INH.

In 1970 130 cases were admitted for hospital treatment of active tuberculosis or evaluation, occupying in total 6.7% of all native hospital bed-days, or 8462 bed-days. Practically no tuberculose meningitis cases are seen.

Otitis media is a widespread infant infectious disease, serious because of its sequela. Among natives it is the most common cause of childhood morbidity. It is therefore given high priority for control and looked after systematically by the village health aides. It is notifiable disease. In one prospective study it was revealed that 38% of the population had draining ears before their first birthday. It is known that the disease is related to acute respiratory infections and these in turn to inadequate and draughty houses. Therefore materials and construction programmes for more adequate housing are being offered throughout the state.

Mental health problems are rapidly increasing in Alaska. Alcoholism often causes family break-up. In 1968 the mortality rate in alcoholism among Alaska Natives was 14 times greater than the rate for the general US population. In Anchorage, Natives make only 4% of the population but make up 66% of the arrests for being drunk.

A growing use of drugs, such as marijuana and hallucinogenes (LSD) has been reported. Suicides were reported as follows:

All US (1965-68)	All races	10.9	cases per 100.000 population
	Whites	11.7	
	Non-whites	5.0	
Alaska	Whites	15	
	Natives	23	(sic!)

Suicides and homicides together were in 1968 (46/100.000) more than twice that of the general US population.

The ten leading causes of hospitalization (1970) at the Native hospitals were:

	% of all admissions	% of all inpat. days
Delivery	10.8	7.1
Otitis media	5.6 (546 cases)	6.2
Mental diseases	5.5	3.4
Senility and illdefined diseases	5.2	3.2
Pneumonia	4.9	3.7
Fractures etc.	4.1	5.7
Eye diseases	3.1	4.8

Thereafter come lacerations, etc., breast and female genit. organs' diseases, and 'other' respiratory diseases, making a total (the ten groups) of 48.1% of all cases admitted (9810), occupying about 45% of all bed-days (126.290).

2. The Northern Region

a. Fairbanks

The Northern Region, all based on permafrost, covers the three public health service districts Barrow, Tanana and Kotzebue of together 0.8 million sq km, or more than half of Alaska's total land area. But with a population of only 67.000. Thus the average population density is extremely low, one inhabitant per14 sq km. If the Fairbanks area is excluded, the figure will be one for 22 sq km. Most of the region are 'empty areas'.

For supervision of public health services the State Govt has a regional health officer and a nursing supervisor, stationed in Fairbanks. The Alaska Native Health Service has three hospitals in the Northern area: Tanana, Barrow and Kotzebue. The phycisians from these hospitals annually visit all settlements in the district for outpatient clinics and other public health duties. There are 12 nurse districts in the region with a public health nurse and a health center in each. The nurses usually visit all settlements three times a year.

Practically all villages and often also small settlements and hamlets have airstrips and in many cases radiotelephone, utilized by village health aides, who have a drug kit for medical services at their disposal.

Fairbanks has 17.000 inhabitants, with the same number of population in its immediate surrounding and trading area. It is the commercial and scientific center for the Northern Region and has one of the two universities in Alaska. The University of Alaska, especially its Institute of Arctic Biology, contributes substantially to studies of health problems of Alaska. The same concerns the Naval Arctic Research Laboratory (NARL) at Point Barrow and the Arctic Health Research Center (AHRC) in Fairbanks. This latter institution has a total staff of 75 specialists and scientists working with health problems of the Arctic

AHRC has the following departments and activities:

Behavioral Sciences (mainly anthropology)	(Milan)
Chronic Disease	(Scott)
Infectious Disease	(Rausch)
Environmental Sanitation	(Cohen)

At the University there is an embryonic medical faculty. Medical students can now take their first $\frac{1}{2}$ year study there. The subsequent course work is taken at the University of Washington Medical School.

In order to collect relevant information about particularly the Eskimo population and their public health problems, three places were chosen for visits by the writer:

Wainwright represents a rather traditional genuine small, coastal Eskimo population, still mainly with a self sufficient household economy, hunting and fishing.

Barrow represents the urbanized Eskimo population and at the same time an heroic government experiment with a modern settlement on the tundra and an accelerated economic and social development.

Anaktuvuk, finally represents a small caribou-hunting inland Eskimo population, recently settled after having been nomadic.

All three places are representative for the present transitional stage, typical for the Eskimo population in Alaska as well as elsewhere.

b. Barrow (Utkeagviak) and Point Barrow

Barrow district with 210.000 sq km and 2700 population stretches along the Arctic Ocean Coast and has only three Eskimo settlements plus the new oil-town at Prudhoe.

Barrow, 'fourth class city', is the farthest-north settlement in North America, located 430 km N. of the Arctic Circle on the tundra. It has a population (1970) of 2300. In 1950 the population was only 951.

Wainwright with 300 population is located 140 km W of Barrow and Kaktovik with 100 is located 500 km East. There are village health aides, drug kits, radiotelephone and airstrips in both these places and a private airplane in Wainwright. Both places are visited annually by the doctor and the public health nurse in Barrow. The villages have their own self-trained village midwives.

Barrow has a mean annual temperature of +9.8 degr. C. and a precipitation of 11 cm/year, of which 7 cm as snow (70 cm snow). There is no railway or road, but daily flights connecting Barrow with Fairbanks. Once a year the Bureau of Indian Affairs' vessel from Seattle visits the North Slope settlements.

The Barrow Native Hospital has 14 beds, X-ray set-up, two physicians, dentist, pharmacist, social worker (vacant), teleprinter and gateway TV-watcher. The doctors have converted a two year military service requirement to Public Health service in Barrow.

Independent of their economic situation, Natives are treated free, while non-natives pay for treatment. Many unskilled native workers make 14-15000 US dollar per year with a tax of about 10%. Most people are employed in Government, communication or transport service and in trade.

The outpatient department had last year (1970/71) about 12000 visits in total, 7000 of which first visits, corresponding to an average utilization ratio per Barrow inhabitant of three first visits per year.

Ten leading causes represent 62% of all first visits:

	% of all first visits
Upper respiratory infections, flu, etc.	22
Otitis media acuta (chronic cases make additionally 1%)	8
Wounds, burns, etc.	7
Gastritis, ulcus, gastro-enteritis	6
Musculo-skeletal disorders	5
Eye diseases (60% of the cases are infections)	5
Impetigo and other skin infections	3
Bronchitis and pneumonia	2
Gonorrhoea	1.4
Psychosis and neurosis	0.8

Prenatal care covering all pregnancies is carried out at the hospital, and so are all deliveries and the first post-natal visit, 6 weeks after delivery, especially for the purpose of family planning education. Intrauterine devices are used. The number of deliveries (100 last year) corresponds to a birth rate of 47 promille.

The infant mortality is 20 °/oo (sic!). With a simultanous low crude death rate, the exceptionally high annual population increase in Barrow (4%) can be explained. There is also a certain immigration from other Eskimo settlements. In the Alaskan Eskimo population as a whole, the infant mortality is about 50, or three times higher than in the US generally.

Together with waterborne gastro-enteritis, otitis media is regarded the number one infectious disease. About 700 new cases are seen per year in Barrow, of which half the number in age group one month-4 years.

The relatively high incidence of gastritis and ulcers (30 new cases per month) indicates a certain stress situation among the urbanized population. There is also an unexpected high number of refraction anomalies, especially myopia. - Among the impetigo cases the child population is overrepresented. About eight new cases are seen monthly. - Surprisingly few cases of anemia, bronchitis and burns are seen - contrasting to situations in other underdeveloped and 'primitive' societies.

In 1969/70, 371 cases in all were admitted to the hospital, occupying 2442 bed-days making an average stay of 7 days. 52% of all admittances and 44 of all bed-days were under five diagnose headings:
Delivery cases, pneumonia, mental disorders, senility and illdefined diseases, and intestinal infectious diseases. Acute brain disorders take 4% of the total bed-days. Otitis cases in Barrow are principally treated as outpatients.

With the present utilization ratio of the hospital beds (50%) and a total of 10.000 outpatient visits per year, the cost per inpatient day could be estimated at US $50-100 and each outpatient visit 25-50, with the annual hospital budget of US $1 million. The total construction cost of the hospital (14 beds) has been given as US $2.5 million.

The Barrow Well-Baby Clinic with a public health nurse, controls practically all infants, and home visits are carried out in all cases. There is no undernutrition seen, but some malnutrition only by choice. 75% of all food is from hunting and fishing, and 25% is purchased, mainly tinned food. Dental caries is increasing.

In the past all parts of the animal were eaten, including the content of the stomach and inmates, securing a certain and regular vitamin provision.

All infants are given iron, multivitamins and fluorid drops. Mothers with infants below 18 months get 5 gallon treated and safe drinking water weekly free, as a measure against gastro-enteric infections.

Water supply and sewage systems in Barrow are as follows. The Bureau of Indian Affairs (BIA) takes water from a fresh water lake on the tundra 4 km inland, in water tanks and sells it ($3.00 for 55 gallons, which is equivalent to 200 liters). Some individual families collect their own water and have tanks with taps in their houses. From November and onwards

ice from the lake, or blue-ice from the ocean, is collected and stored.

For the hospital and the elementary school, BIA runs three distillation units, taking brackish water from a nearby lagoon, filtering and chlorinating it after desalting.

There is no community sewer system. Human sewage is individually collected in honey buckets and plastic bags and together with garbage brought individually to the dump 2.5 km N. of the town. Food waste is given to the dogs. Garbage, rubbish, solid waste, tins and empty petrol drums are spread all over the place and in the pools of melted ice on the top of the permafrost. The roads hinder the outlet of the pools to the ocean. A culvert system is needed and wanted. A garbage collection system with paper bags is planned to be established. Sewage from the hospital is treated with oxygen and piped to a second lagoon for sedimentation and decomposition.

BIA runs an electric power station with diesel and gas turbine motors for the whole town, and natural cooking gas is taken in pipelines from sources 5 km north to the individual households.

Barrow has telephone and radiotelephone linking it with all Alaska. - BIA runs a housing renewal project, offering prefabricated houses on a loan system.

Barrow has a small hotel, 'Top of the World', and an 'Eskimo Café', a worn wooden house with juke-box, offering the latest US hits. The colourful calendar of the Alaska Airways is the only decoration, on the menu whale is offered as well as caribou- and reindeer meat, and imported tinned foods. Emancipated Eskimo girls smoke cigarettes and drink coca-cola ($0.50 per bottle).

A multidisciplinary team from the Institute of Arctic Biology of the University in Fairbanks and 7 other universities under the IBP and headed by F.A. Milan has run repeated longitudinal

studies of the North Slope Eskimo population including studies of growth, physical fitness, psychological tests and zoonotic infections.

The Naval Arctic Research Laboratory (NARL) at Point Barrow 5 km N. of Barrow town, is a hypermodern research station with a strategic position right in the Arctic, offering quarters (hotel-rooms for 86), food, libraries, laboratory space (41 complete laboratory units), transportation, field clothes and other equipment to about 100 scientific projects and 300 visiting scientists annually. Nearby, 5 miles distant, is one link in the famous DEW-line, Distant Early Warning Line radar installations, running from NW Alaska to the W. shore of Baffin Bay opposite Greenland.

This laboratory has played a vital role in serving Arctic research and engineering needs the past 24 years. The transports to and from Wainwright, food and accomodation in Wainwright, Barrow and Anaktuvuk were generously provided to the writer by NARL, which has 19 well equipped field stations all over N. Alaska. NARL supported for five years a floating ice-station, Arlis II, and the famous Ice Island T-3 (Fletcher's Ice Island).

c. Wainwright, visited by the writer 24-28 July, is located on the North Slope of Alaska some 140 km W. of Barrow lonely on the Arctic Ocean coast, leading a traditional way of life with whale, seal and caribou hunting as the main sources of livelihood. Herds of 200-300 caribous were seen by the writer from the airplane. On several places of the coast there were heaps of scrap-iron and empty oil drums, left by armed forces, disturbing the otherwise grandiose view of untouched Arctic wilderness.

The village has 300 inhabitants in a rather unorganized and unplanned settlement with inadequate housing, mostly of slum character. Houses facing each other at all possible angles are mostly constructed of scrap lumber taken from machinery-packing crates and other available refuse. The surroundings of the houses are littered with rubbish, empty containers, tins, oil drums, broken sledges and snow-scooters. Water pools and barking dog-teams complete the picture, which in its back-

ground has a tundra cemetary with simple wooden crosses.

Each family has a cellar, dug 4-5 meters down into the permafrost, where food may be stored for generations. It has one or two 'skidoos' (snowscooters) and a skin boat (umiak) built for use with outbord motor. BIA and ASHA run a rehousing project in the village and prefabricated houses arrived by boat through the Bering Strait during the visit of the writer. The Alaska State Housing Authority (ASHA) is federally subsidized by the Housing and Urban Development (HUD).

On a whale hunting expedition a few days before the arrival of the writer, the villagers got 166 white whales (beluga) in a place 15 km W. of the village, filling all cellars and providing food for the whole next year. Meat, blubber and muktak (whale skin with subcutaneous fat) covered the ground all over the village.

A nutrition team (Harold Draper, University of Illinois et al.) studies the Eskimo diet in Wainwright.

Fresh water is taken from a nearby lake. There are no arrangements for sewage or garbage disposal In winter it is all hauled out on to the sea ice.

The settlement has no road but an airstrip with regular air connections with Barrow.

There are two small churches one Presbyterian and another Assembly of God Church, a primary school and a NARL field station, presently occupied by the anthropology team, continuing their studies in Wainwright. The village has been intensively studied by Milan et al. from 1968, and some findings will be mentioned here: the village had in 1968 308 inhabitants, of whom 169 males and 139 females with a median age of 16.1 years. Sixty-seven individuals were hybrids. (Compare Greenland in 1961: 94.2 males per 100 females).

The infant/child mortality 0-5 years was 190 per thousand newborn (compare USA 27/1000). The rate of twin birth was 27.3 per thousand live births, or twice that of Caucasian population. It has in other places been demonstrated that there is marked racial differences in twin rates, ranging between 44.0/1000 in Nigeria down to 6.6 reported from Japan.

Until 1904, the village had no reason for existence as a community, when the first school house caused the settlement at that particular location by the remnants of the original coastal and inland Eskimo population in NW Alaska. The Wainwright population of today is composed of descendants of Eskimos from the entire region of NW Alaska and the North Slope W of Barrow.

Deliveries take place in the homes, assisted by self-trained village midwives. Of the 26 women in fertile age, 14 were using modern methods of fertility control (12 using intra-uterine device and 2 taking oral contraceptives). The 17 post-menopausal women (one of whom infertile) reported an average of 10.5 live births (9.9 ± 4.08). The birth rate was about 50/1000 (Greenland 1961 50.2/1000) resulting in an annual population increase of about 3% over the last 13 years. Accidental deaths were common among children but almost non-existent among male hunters - which was surprising.

d. Anaktuvuk Pass, visited by the writer 27/7 - 1/8, is an excessively isolated settlement of 120 inland Eskimos and caribou hunters in the wild Brooks Range Mountains 250 km N of the Arctic Circle and 70 km N of the tree line in a deep valley, surrounded by snow- and glacier-capped mountains. The polar night and the midnight sun each last three months annually. The vegetation is dominated by willow brush.

The Nunamiut, as the tribe is called, were nomadic until 20 years ago. One group came from the Killik River area and one from the Tulugak Lake. The settlement - provocated by a post office opened on the spot - is unplanned. After one year the willow vegetation was all used for fuel and the Government had to provide airborne oil for heating of the primitive sod-houses. With lumber provided and subsidized by the Government, some new houses were constructed. Several

other donors offered assistance to the village. The villagers are given food stamps by the Government, which give them some food stuff free of charge.

A river runs through the valley, and on its banks is a primitive and adventurous airstrip for the weekly mail-flights. Caribou pass through the valley biannually on their migratory route between the mountains and the Arctic coast, and that is the prerequisite for the tribe to remain there. Anaktuvuk means 'faeces (of caribou) all over the place'.

The only way in the past to reach the neighbour villages, Barrow 550 km N. and Bethel 160 km S., was by using dog-teams. These are still to some extent used during hunting expeditions, but are rapidly replaced by snow-scooters (ski-doos). There are only 87 dogs left in Anaktuvuk. The Eskimos have great difficulties in maintaining and repairing their ski-doos. Outside one poor Eskimo house were five broken ski-doos, and the owner explained that he was going to buy a new one this autumn. A ski-doo costs from 1000 to 1500 dollars.

In the past on hunting expeditions with the dog-team the Eskimo could in critical situations kill a dog and eat it and thus survive. I once asked an old Eskimo what he thought of ski-doos. He shook his head and said: 'You can't eat them'. Some tragedies have already been reported of Eskimos stranded in the wilderness with their broken ski-doos.

The village has a small church, a modern primary school (construction cost $100,000), a radiotelephone utilized by the village health aides, who also have a drug supply at their disposal. Otitis media is still a serious problem, for which poor housing and sleeping on the floor (willow brush) have been made responsible. NARL has given the villagers material for construction of better beds. In some families family planning is applied.

A cemetary and cellars for food storing are located outside the village.

The settlement consists of 23 households and about 120 inhabitants. Practically all the houses are inadequate for a climate with winter-temperatures down to minus 50 - 60 degrees C. Five are old-fashioned sod-houses. As a whole the village gives an unplanned and untidy impression with lots of rubbish, litter, broken sledges and ski-doos, petrol tanks, etc. around the houses. The place looks like slum although the population is healthy, well nourished and well dressed and the settlement is framed by magnificient mountains. Once a week a movie is shown in a barrack built as 'town hall' and also used for'bingo'.

Hardly had the settlement begun before intensive scientific studies started - and are still going on - including census-taking, archeology, physical anthropology. Radioactive fall out of C_S 137, S_1 85 and C_S 134 is presently being studied.

The last day of my visit in Anaktuvuk Pass (1st August) the first snow began to fall.

VIII. Discussion - Public Health Problems and Services

> 'A mixture of diets associated with different cultures may be disastrous, for the bad points of each may be adopted' (FAO)

In principle - and beneficially - Alaska should be classified as a developing country and be compared with its counterparts in other parts of the world, including the Tropics. Too much stiff latitude-thinking may hamper a fruitful exchange of experience of development planning. Strictly speaking, terms such as 'arctic medicine' and 'tropical medicine' are expressions of convenience rather than distinction. In both cases is it rather a question of underdeveloped areas. The second characteristic is underpopulation, which is also found in many arid areas of developing countries of the Tropics. Alaska presents this latter condition on its extreme. There seems to be a relationship between latitude and density of population in the world, as the density is decreasing with latitudes closer to the North Pole.

Finally Alaska offers extreme climatic conditions, which like hot climates may present some stress and even obstacles to development. In any case it has already developed special living patterns.

Thus there are three basic characteristics: underdevelopment, underpopulation and an extreme arctic climate are decisive factors. Because of the rather enormous resources of the US Government, we could add a fourth characteristic: over-protection - especially when we compare Alaska with other developing areas of the world.

Although the Eskimo population is only one 60,000-part of the world's total population and the Alaska Eskimos represent about one 10,000-part of the total US population (the Lapps make about one promille of the Scandinavian population). Studies of this population is of principal interest as it represents a part of a multitude of similar minorities, isolates and transitional people all over the world, often neglected, misunderstood and wrongly treated - if not totally forgotten in the development plans. At the same time it is worth studying the Eskimo adaptation to an extreme environment being the only people of the world living permanently in a real arctic environment and who have developed their adaptation and their cultural and social patterns accordingly by using the arctic ecology to their maximum advantage.

The Eskimo world is involved in the rapid technological and social revolutions that have rather indiscriminately swept around the globe in the past few decades. Any development designed outside and applied - more or less by force - on primitive people constitutes a great responsibility on the donor side or assisting agency. Unexpected and unwanted changes may be the result. Already such a small innovation as a postoffice established in a camp (Anaktuvuk), seems to have been the incentive to domiciliation of the nomadic hunters, the Nunamiut Eskimos. The school house in Wainwright was the signal for the coast Eskimos to settle down on this spot. The place where Amundsen had his camp in the Canadian wilderness is now a permanent Eskimo settlement.

By offering - or not offering - facilities for education, health services, communications, allowances and gifts, development can certainly be influenced, and thus, these introductions should be looked upon as parts of a long term plan aiming at keeping people in a certain place and change their cultural pattern. The consequences of such a start can to some extent be foreseen and must be considered.

If the place - such as the tundra - is suitable for permanent settlements, if their ecological prerequisites for a certain level of standard of living, if reasonable requirements on environmental hygiene (latrines, sewage, etc.) can be met, fuel available for heating the houses in an arctic climate, health and educational services offered. All these questions should be dealt with before steps are taken, which may guide the development in the direction of e.g. fixed settlements and domiciliation in new places.

In today's world, cultures are constantly changing. The rate may be minimal - cultural 'drift' - or it may be maximal, as when a society completely assimilates another. A culture is never static. Any breaking of primitive isolates however offers delicate problems, often wrongly tackled by authorities involved. In the transitional phase following the first initial changes and lasting one or two generations, few people - both inside and outside the concerned group in transition - know how to deal with it in an adequate and considerate way. Already the change to a monetary economy from a self sufficient household-economy is a sensible period. The results in some places of the world of populations in such transitional phases are alarming and call for discretion and 'hurry slowly'. The guidance of people over this period is a great responsibility which one cannot escape. The juxtaposition of two different cultures results in acculturation, by which people lose valuable ingredients of their native culture and inheritance and grasp less valuable parts of the new culture, into the direction of which they are driving. They stand with both legs between two cultures and tend to lose their cultural self confidence.

With the communication systems of today it is not likely that anybody in the future will accept a standard of living

substantially lower than that of their neighbours and countrymen.

It is also important in which order the development steps are taken and if the inhabitants themselves have asked for it or not, if they themselves understand what is going on and the long term consequences of certain measures. One should not - at an early phase - hesitate about encouraging the moving of population groups to places where there are prerequisites for a wanted standard of living without assistance from outside. Empty areas should be included in the calculations of the planning. It is unlikely that a standard reached and maintained by 'artificial breathing', assistance from outside, which may be eternal, is a realistic base for cultural self confidence.

The speed of the development, particularly when it is imposed and paid for from outside, is of importance. We may well be able to control and even eradicate diseases such as polio, diphteria and tuberculosis by massive input of economic resources, but the social and cultural environment and the human being may not be able to follow the high speed. He may end up in a social and mental slum although he is physically perfectly healthy and well nourished. The expected length of life is now only 6 years shorter than in USA in general and the infant mortality is unexpectedly low. But as far as mental and social well-being is concerned 'know-how' can not be bought, but will come with experience.

If the technical problems such as the engineering control of permafrost remains to be answered it may disqualify certain places for human habitation. Most native villages are lacking basic modern sanitation facilities.

Eskimos are pragmatists and wellknown for an exceptionally high technical development in their natural setting, while there seem to have been little incentives today for social development in their traditional agglomeration. After domiciliation there is certainly use for it.

In most places of the world physical health has come slowly and largely as an effect of general social, economic and hygienic development of societies. This has been a necessity due to financial limitations. The curve of development in most developing countries is far more flat than that of USA in general and in turn, the development curve for many material fields in Alaska seems to have been too steep.

'It is doubtful, that further significant improvement will occur without major environmental modifications... Housing and sanitation, which significally influence the dissemination of acute respiratory disease must be improved before reduction in the disease will be noted'. (Fleshman)

Inadequate, underventilated housing has also been accepted as a factor behind acute viral respiratory diseases, prevailing with exceptional frequency in smaller, primitive communities in Alaska.

In spite of the wellknown relationship between high incidence of tuberculosis and unfavourable socio-economic conditions, especially housing, control of tuberculosis has still been possible in Alaska without going this long way. This has been possible through high expenditures, and in a short period of time has been achieved what else in the socio-economic way would have taken much longer time although more 'physiologically' at a lower cost probably.

Roger Revelle (Post chairman, US National Committee for the IBP) said: 'Our technology out-placed our understanding, our cleverness has grown faster than our wisdom.'

With the USA Federal Government behind, Alaska has a unique position, as the financial and technical know-how resources are sufficient for any material development, at any speed and in shortest period of time. Presently the Federal Government spends about US $600 per year and capita on its Eskimo population (corresponding figure for Danish assistance to Greenland Eskimos is US $1000), and several serious health problems have been solved in a minimum of time.

Although the resources in other parts of the world are much more limited, much can be learned from the programmes in Alaska, especially as the physicians in Alaska generally are very public health minded and interested in development problems and philosophy, and in health planning. This was apparent at the 1971 Circumpolar Health Symposium in Oulu in Finland. Few countries can offer a visitor better written and oral information on public health problems.

Health services have been designed and offered by the Federal Government on the one hand and by the State of Alaska Government on the other. Some overlapping and certainly a great deal of confusion has been caused by this duality in headmanship. In addition, the military forces have their own medical services and hospitals.

A central TB registry has been maintained by the State (formerly Territory) since 1950. Both natives and non-natives are included.

Generally speaking, medical care has in Alaska taken precedence over preventive medicine. As Alaska is a part of USA, the profitableness of health expenditures has not been necessary to scrutinize, and therefore there is, for a scarcely populated area, an unusually good network of infrastructure, supplemented by radiotelephone and rather unlimited air transports of patients and personnel. Thus the accesssability rate is high and the total utilization rather low, also it is high counted per capita served.

The picture presented by the three settlements visited by the writer is one of environmental slum populated with physically healthy and wellfed Eskimos. Reports from Alaska indicate that mental and social health problems are rapidly increasing. Mental disorders, neurosis, suicides, venereal diseases, alcoholism and crimes and a 'cargo cult' with 'allowance-minded' individuals seem to be brewing. It seems unrealistic to presume that any of the Eskimo settlements visited will ever be economically independent, but rather survive on economic 'artificial breathing'. Too rapid

cultural changes, increased mobility and a continual separation of Native families, as is often required in modern development have been factors of importance to some social diseases.

As has been the case with the American Indians, Lapps, Masai, etc. there are still unsolved problems in regard to ownership of land in Alaska. The Government has recently decided (1971) to buy ground from the Natives at a cost of US $925 million, corresponding to a sum of US $20.000 for each Native, leaving 40 million acres to their own disposition.

Problems with regard to the political representation by Natives are not yet finally solved.

In summary: Alaska is interpreted as an underdeveloped, underpopulated area with a certain overprotection of a population inhabiting an ecologically poor area with an extreme climate. It all results in rather unplanned and 'slummy' settlements inhabited by healthy and wellnourished Natives. While the physical health is improving rapidly, the mental and social health seem to deteriorate - probably due to a too fast material development based on a generous financial assistance. Agencies responsible for development steps should be responsible for side effects to.

The development of urbanization and creating of towns on the tundra is questioned, firstly because engineering problems with regard to the permafrost are not solved, secondly because it is likely to produce a population forever depending on external assistance.

Even more weight on preventive medicine seem to be needed as well as more social anthropological knowledge.

Alaska is occupied with a lot of problems related to our Scandinavian Subarctic problems and with problems of developing countries, where all our countries operate assistance projects. With the intensive and well documented work carried out especially in the public health field in

Alaska, this country can surely contribute much to discussions and as a rare experimental field for public health. Thus, a continued and intensified exchange of Arctic health experience, knowledge, and visitors between Alaska and the Scandinavian countries is highly desirable.

Finally, it can be hoped, that the next International Circumpolar Symposium will pay much attention to these problems and to Arctic public health planning in general. Skin temperatures and some other traditional fields of Arctic research seem - relatively speaking - to have been given too much space.

IX. Acknowledgement

The writer of this report wants to thank the United States National Academy of Science for the generous invitation which made this study visit to Alaska possible and a great experience.

Through the assistance especially by the Arctic Health Research Center in Fairbanks, its Director Dr. Beck and Dr. Milan et al., the Alaska Native Health Service organization in Anchorage and its personnel, Drs. Johnson, Fleshman et al., and the Naval Arctic Research Laboratory at Point Barrow, the study trip was carried out in the most purposeful and profitable way.

As a link in an already fruitful exchange of experience and knowledge in the field of Arctic health, the visit has served its purpose.

X. Short Eskimo vocabulary:

Inuk	Eskimo (literally: human being)
Innuit (Innupiat)	Eskimos
Angakok	Shaman, medicine man
Tannik	White man
Nalaukmuit	- " -
Gussik	- " - (literally: cossack) (more derogatory)
Iglak	Stranger, foreigner
Tutu	Caribou
Nekki	Caribou meat
Kunyak	Reindeer
Beluga	White dolphin
Oogruk	Seal
Aklak	Bear
Nanook	Polar bear
Amaguk	Wolf
Kavik	Wolverine
Kimik	Dog
Oomiak (Umiak)	Skin boat
Ooniat	Sled
Ulu	Woman's knife
Tagalook	Snow shoes
Kamik	Boots
Parka	Eskimo frock
Atigi	Woman's parka
Mukluk	Ladies shoes
Cache	Store house
Matlak (Muktuk)	Whale skin
Jaai	How do you do
Koyanuk	Thanks
Puk	Much
Achu	Don't know
Alapu	Cold
Alupa	Very cold

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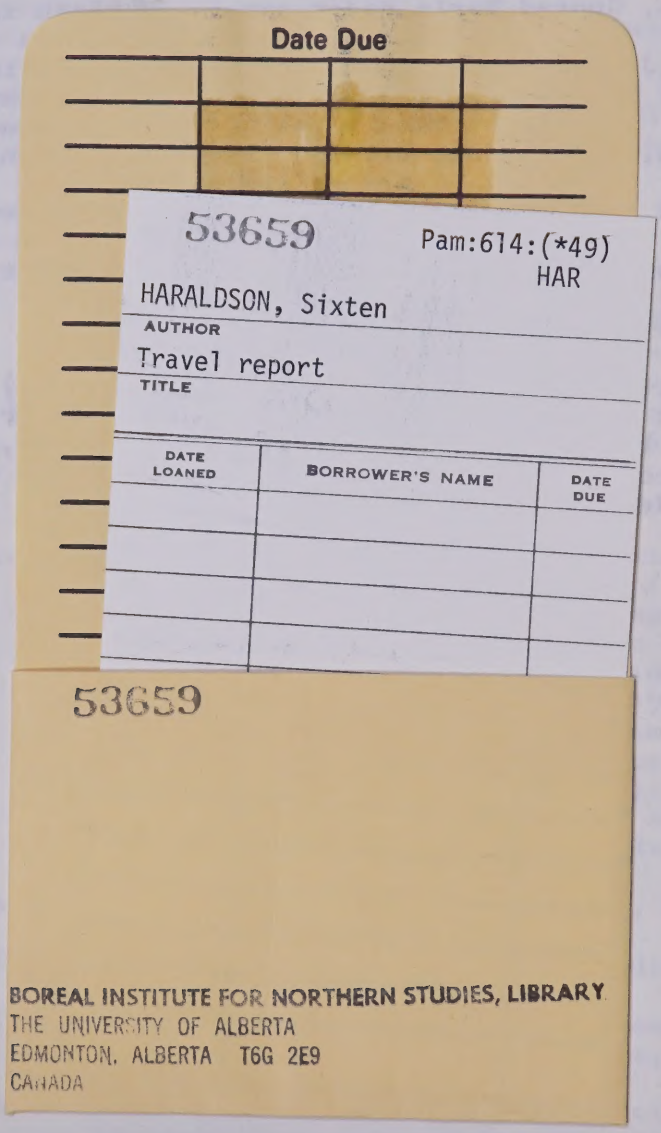
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